Name: Date:

Polynomial Factoring solution (version 41)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 - 4x + 11 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(11)}}{2(1)}$$

$$x = \frac{-(-4) \pm \sqrt{16 - 44}}{2(1)}$$

$$x = \frac{4 \pm \sqrt{-28}}{2}$$

$$x = \frac{4 \pm \sqrt{-4 \cdot 7}}{2}$$

$$x = \frac{4 \pm 2\sqrt{7}\, i}{2}$$

$$x = 2 \pm \sqrt{7}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $9 + 7i$ and $3 + 6i$ in standard form $(a + bi)$.**

Solution

$$(9 + 7i) \cdot (3 + 6i)$$

$$27 + 54i + 21i + 42i^2$$

$$27 + 54i + 21i - 42$$

$$27 - 42 + 54i + 21i$$

$$-15 + 75i$$

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3. **Write function $f(x) = x^3 + x^2 - 25x - 25$ in factored form. I'll give you a hint: one factor is $(x - 5)$.**

Solution

	1	1	-25	-25
5		5	30	25
	1	6	5	0

$$f(x) = (x-5)(x^2+6x+5)$$

$$f(x) = (x-5)(x+1)(x+5)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+1)\cdot(x-2)^2\cdot(x-5)^2$$

Sketch a graph of polynomial $y = p(x)$.